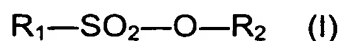


## Claims

1. Compositions for producing amino resin products by melt processing, characterized in that the compositions are composed of
- A) from 95 to 99.9% by mass of solvent-free meltable polycondensates of melamine resins having molar masses of 300 to 300 000,
  - B) from 0.1 to 5% by mass of weak acids as thermoinducible curing agents, composed of
  - B1) acid formers of the type of blocked sulphonic acid of the general formula (I)



$R_1$  = unsubstituted or substituted aryl or biphenyl

$R_2$  = 4-nitrobenzyl, pentafluorobenzyl or  $-N=C \begin{matrix} \swarrow CO-R_3 \\ \searrow N(R_4)(R_5) \end{matrix}$

substituents

where

$R_3$  = non-substituted or substituted alkyl or aryl,

$R_4$  = H,  $C_1$ - $C_{12}$ -alkyl, phenyl,  $C_2$ - $C_9$ -alkanoyl or benzyl,

$R_5$  = H,  $C_1$ - $C_{12}$ -alkyl or cyclohexyl,

or  $R_3$  and  $R_4$  or  $R_5$  together with the atoms to which they are attached form a 5- to 8-membered ring which can be fused by 1 or 2 benzo radicals,

- B2)  $C_4$ - $C_{18}$  aliphatic and/or  $C_7$ - $C_{18}$  aromatic carboxylic acids,
- B3) alkali metal salts or ammonium salts of phosphoric acid,
- B4)  $C_1$ - $C_{12}$ -alkyl esters or  $C_2$ - $C_8$ -hydroxyalkyl esters of  $C_7$ - $C_{14}$  aromatic carboxylic acids or inorganic acids,
- B5) salts of melamine or guanamines with  $C_{1-18}$  aliphatic carboxylic acids,
- B6) anhydrides, monoesters or monoamides of  $C_4$ - $C_{20}$  dicarboxylic acids,

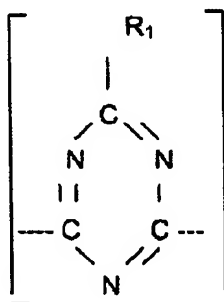
- B7) monoesters or monoamides of copolymers of ethylenically unsaturated C<sub>4</sub>-C<sub>20</sub> dicarboxylic anhydrides and ethylenically

unsaturated monomers of the type of C<sub>2</sub>-C<sub>20</sub> olefins and/or C<sub>8</sub>-C<sub>20</sub> vinylaromatics, and/or

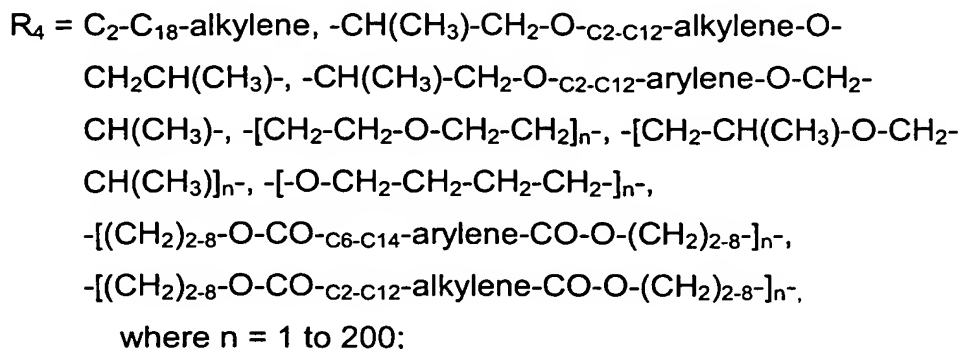
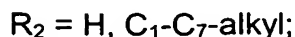
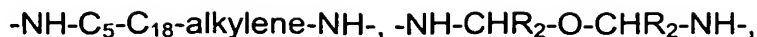
B8) salts of C<sub>1</sub>-C<sub>12</sub>-alkylamines and/or alkanolamines with C<sub>1</sub>-C<sub>18</sub> aliphatic, C<sub>7</sub>-C<sub>14</sub> aromatic or alkylaromatic carboxylic acids and also inorganic acids of the type of hydrochloric acid, sulphuric acid or phosphoric acid, and

C) if desired, up to 400% by mass of fillers and/or reinforcing fibres, up to 30% by mass of other reactive polymers of the ethylene copolymer, maleic anhydride copolymer, modified maleic anhydride copolymer, poly(meth)acrylate, polyamide, polyester and/or polyurethane type, and up to 4% by mass, based in each case on the melamine resin polycondensates, of stabilizers, UV absorbers and/or auxiliaries.

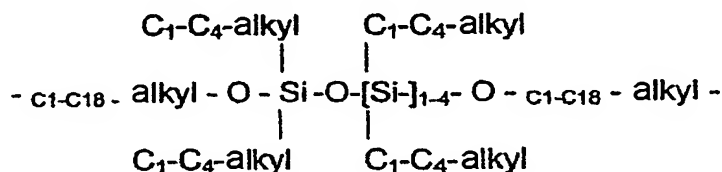
2. Compositions according to Claim 1, characterized in that the melamine resin polycondensates are mixtures of meltable 4- to 1 000-nucleus polytriazine ethers in which the triazine segments



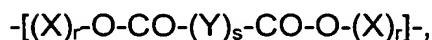
R<sub>1</sub> = -NH<sub>2</sub>, -NH-CHR<sub>2</sub>-O-R<sub>3</sub>, -NH-CHR<sub>2</sub>-O-R<sub>4</sub>-OH, -CH<sub>3</sub>, -C<sub>3</sub>H<sub>7</sub>, -C<sub>6</sub>H<sub>5</sub>, -OH, phthalimido-, succinimido-, -NH-CO-C<sub>5</sub>-C<sub>18</sub>-alkyl, -NH-C<sub>5</sub>-C<sub>18</sub>-alkylene-OH, -NH-CHR<sub>2</sub>-O-C<sub>5</sub>-C<sub>18</sub>-alkylene-NH<sub>2</sub>, -NH-C<sub>5</sub>-C<sub>18</sub>-alkylene-NH<sub>2</sub>, -NH-CHR<sub>2</sub>-O-R<sub>4</sub>-O-CHR<sub>2</sub>-NH-, -NH-CHR<sub>2</sub>-NH-, -NH-CHR<sub>2</sub>-O-C<sub>5</sub>-C<sub>18</sub>-alkylene-NH-,



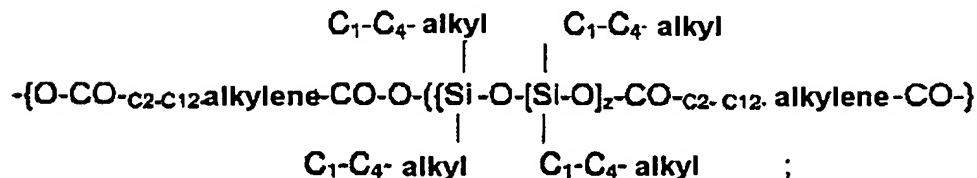
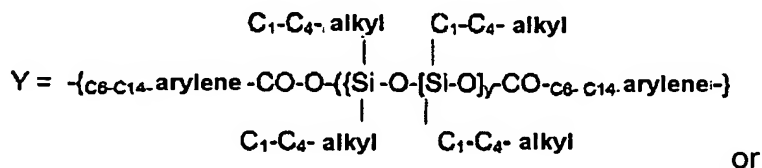
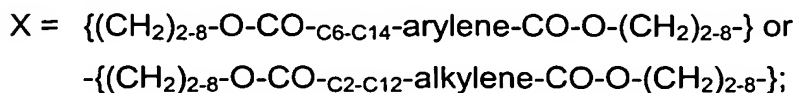
- sequences containing siloxane groups, of the type



- polyester sequences containing siloxane groups, of the type

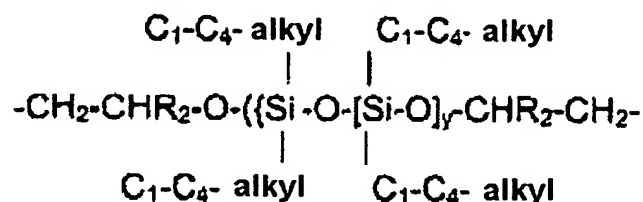


in which



$r = 1$  to  $70$ ;  $s = 1$  to  $70$  and  $y = 3$  to  $50$ ;

- polyether sequences containing siloxane groups, of the type



where  $R_2 = \text{H}$ ;  $\text{C}_1\text{-C}_4\text{-alkyl}$  and  $y = 3$  to  $50$ ;

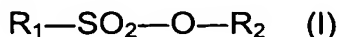
- sequences based on alkylene oxide adducts of melamine, of the type of 2-amino-4,6-di- $\text{C}_2\text{-C}_4\text{-alkyleneamino-1,3,5-triazine}$  sequences;
- phenol ether sequences based on dihydric phenols and  $\text{C}_2\text{-C}_8$  diols, of the type of  
 $\text{-C}_2\text{-C}_8\text{-alkylene-O-C}_6\text{-C}_{18}\text{-arylene-O-C}_2\text{-C}_8\text{-alkylene-}$  sequences;

are linked by bridge members  $\text{-NH-CHR}_2\text{-NH-}$   
 $\text{or-NH-CHR}_2\text{-O-R}_4\text{-O-CHR}_2\text{-NH-}$  and  $\text{-NH-CHR}_2\text{-NH-}$  and also,  
 where appropriate,  $\text{-NH-CHR}_2\text{-O-CHR}_2\text{-NH-}$ ,  
 $\text{-NH-CHR}_2\text{-O-C}_5\text{-C}_{18}\text{-alkylene-NH-}$  and/or  $\text{-NH-C}_5\text{-C}_{18}\text{-alkylene-NH-}$   
 to form 4- to 1 000-nucleus polytriazine ethers with a linear and/or  
 branched structure,

in the polytriazine ethers the molar ratio of the substituents  $R_3:R_4 = 20:1$  to  $1:20$ , the proportion of the linkages of the triazine segments through bridge members  $\text{-NH-CHR}_3\text{-O-R}_4\text{-O-CHR}_3\text{-NH-}$  being from 5 to 95 mol%, and it being possible for the polytriazine ethers to contain up to 20% by mass of diols of the type  $\text{HO-R}_4\text{-OH}$ .

3. Compositions according to Claim 1, characterized in that the melamine resin polycondensates are mixtures of meltable 4- to 300-nucleus polytriazine ethers.

4. Compositions according to Claim 1, characterized in that the thermoinducible curing agents of the type of blocked sulphonic acid of the general formula



are blocked sulphonic acids in which the substituents

$R_1$  = unsubstituted or singly or multiply halogen-,  $C_1$ - $C_4$ -haloalkyl-,  $C_1$ - $C_{16}$ -alkyl-,  $C_1$ - $C_4$ -alkoxy-,  $C_1$ - $C_4$ -alkyl-CO-NH-, phenyl-CO-NH-, benzoyl- and/or nitro-substituted  $C_6$ - $C_{10}$ -aryl or  $C_7$ - $C_{12}$ -arylalkyl,



$R_3$  =  $C_1$ - $C_{12}$ -alkyl,  $C_1$ - $C_4$ -haloalkyl,  $C_2$ - $C_6$ -alkenyl,  $C_5$ - $C_{12}$ -cycloalkyl, unsubstituted or singly or multiply halogen-,  $C_1$ - $C_4$ -haloalkyl-,  $C_1$ - $C_{16}$ -alkyl-,  $C_1$ - $C_4$ -alkoxy-,  $C_1$ - $C_4$ -alkyl-CO-NH-, phenyl-CO-NH-, benzoyl- or nitro-substituted  $C_6$ - $C_{10}$ -aryl and/or  $C_7$ - $C_{12}$ -arylalkyl,  $C_1$ - $C_8$ -alkoxy,  $C_5$ - $C_8$ -cycloalkoxy, phenoxy or  $H_2N$ -CO-NH-, -CN,  $C_2$ - $C_5$ -alkyloyl, benzoyl,  $C_2$ - $C_5$ -alkoxy-carbonyl, phenoxycarbonyl, morpholino-, piperidino-,  $C_1$ - $C_{12}$ -alkyl,  $C_1$ - $C_4$ -haloalkyl,  $C_2$ - $C_6$ -alkenyl,  $C_5$ - $C_{12}$ -cycloalkyl, unsubstituted or singly or multiply halogen-,  $C_1$ - $C_4$ -haloalkyl-,  $C_1$ - $C_{16}$ -alkyl-,  $C_1$ - $C_4$ -alkoxy-,  $C_1$ - $C_4$ -alkyl-CO-NH-, phenyl-CO-NH-, benzoyl- and/or nitro-substituted  $C_6$ - $C_{10}$ -aryl,  $C_7$ - $C_{12}$ -arylalkyl,  $C_1$ - $C_8$ -alkoxy,  $C_5$ - $C_8$ -cycloalkoxy-, phenoxy-, or  $H_2N$ -CO-NH-,

$R_4$  = H,  $C_1$ - $C_{12}$ -alkyl, phenyl,  $C_2$ - $C_9$ -alkanoyl or benzyl

$R_5$  = H,  $C_1$ - $C_{12}$ -alkyl or cyclohexyl,

or  $R_3$  and  $R_4$  or  $R_5$  together with the atoms to which they are attached form a 5- to 8-membered ring which can be fused by 1 or 2 benzo radicals.

5. Compositions according to Claim 1, characterized in that the C<sub>1</sub>-C<sub>12</sub>-alkyl esters and/or C<sub>2</sub>-C<sub>8</sub>-hydroxyalkyl esters of C<sub>7</sub>-C<sub>14</sub> aromatic carboxylic acids are dibutyl phthalate, phthalic acid diglycol esters and/or trimellitic acid glycol esters.
6. Compositions according to Claim 1, characterized in that the salts of melamine and/or guanamines with C<sub>1</sub>-C<sub>18</sub> aliphatic carboxylic acids are melamine formate, melamine citrate, melamine maleate, melamine fumarate and/or acetoguanamine butyrate.
7. Compositions according to Claim 1, characterized in that the anhydrides, monoesters or monoamides of C<sub>4</sub>-C<sub>20</sub> dicarboxylic acids are maleic anhydride, succinic anhydride, phthalic anhydride, mono-C<sub>1</sub>-C<sub>18</sub>-alkyl maleates, maleic monoamide or maleic mono-C<sub>1</sub>-C<sub>18</sub>-alkylamides.
8. Compositions according to Claim 1, characterized in that the monoesters or monoamides of copolymers of ethylenically unsaturated C<sub>4</sub>-C<sub>20</sub> dicarboxylic anhydrides and ethylenically unsaturated monomers of the type of C<sub>2</sub>-C<sub>20</sub> olefins and/or C<sub>8</sub>-C<sub>20</sub> vinylaromatics are monoesters or monoamides of copolymers of maleic anhydride and C<sub>3</sub>-C<sub>8</sub>  $\alpha$ -olefins of the isobutene, diisobutene and/or 4-methylpentene and/or styrene type with a maleic anhydride/C<sub>3</sub>-C<sub>8</sub>  $\alpha$ -olefin and/or styrene and/or corresponding monomer mixtures molar ratio of 1:1 to 1:5.
9. Compositions according to Claim 1, characterized in that the salts of C<sub>1</sub>-C<sub>12</sub>-alkylamines and/or alkanolamines with C<sub>1</sub>-C<sub>18</sub> aliphatic, C<sub>7</sub>-C<sub>14</sub> aromatic and/or alkylaromatic carboxylic acids or inorganic acids of the hydrochloric acid, sulphuric acid or phosphoric acid type are ethanolammonium chloride, triethylammonium maleate,

diethanolammonium phosphate and/or isopropylammonium p-toluenesulphonate.

10. Process for producing products from the compositions according to one or more of Claims 1 to 9, produced by melt processing, wherein the compositions are melted in continuous compounders at melt temperatures of 105 to 220°C and residence times of 2 to 12 min and, with curing of the meltable melamine resin polycondensates, by customary processing methods for thermoplastic polymers,
- A) are applied as a melt to a smoothing unit and taken off as sheet via conveyor belts and cut or are applied to and sealed on sheet webs comprising metal foils, polymeric films, paper webs or textile webs and are taken off as multi-component composites and finished,
- or
- B) are discharged through a profile die and taken off as profile or sheet material, cut and finished,
- or
- C) are discharged through an annular die, taken off as pipe, with injection of air, cut and finished,
- or
- D) following the introduction of blowing agents, are discharged through a slot die and taken off as foamed sheet material,
- or
- E) are discharged through the slot die of a pipe sheathing unit and applied in liquid melt form to, and sealed on, the rotating pipe,
- or
- F) in injection moulding machines, preferably with three-section screws with a screw length of 18 to 24 D, at high injection rates and at mould temperatures of 5 to 70°C, are processed to injection mouldings, or



G) in melt spinning units are extruded by means of the melt pump through the capillary die into the blowing shaft and taken off as filaments or separated off by the melt-blown process as fibres, or discharged as a melt by the rotational spinning process into a shear field chamber using organic dispersants, to form fibrils, and processed further in downstream installations,

or

H) are metered by the resin infusion process into an open mould with the semi-finished fibre product and shaped to laminates by the vacuum bag technology, or

I) are injected by the resin injection process into a lockable mould in which there are preforms of textile material, and are shaped to components and cured,

or

K) are used for the melt impregnation of component blanks produced by the filament winding process, braiding process or pultrusion process,

and for full curing where appropriate the products are subjected to a thermal aftertreatment at temperatures of 180 to 220°C and residence times of 30 to 120 min.